



**Herbal**  
**100%**

## # Unit - 1st #

### \* Topics to be covered-

- (A) Herbs as raw materials-
- (B) Bio-dynamic agriculture-
- (C) Indian systems of medicine-

### (A) # Herbs as raw materials #

#### \* Herb:-

• It consists of entire plant or any part of the plant. -

OR

• It consists of any plant parts which has leaves, stem, flowers, roots & seeds, used for different purposes like flavoring, food, medicine & perfume. -

#### \* Herbal medicine / Herbal drug-

• These consist of plants usually in crude forms which have medicinal value. -

OR

• Any part of the plants usually in crude drugs which have medicinal value. -



\* The constituents & their therapeutic activity may be known or unknown.-

Note\*

Isolated compounds from herbs are not considered as herbal drugs.-  
eg° Digitalis is herbal medicine  
But digoxin & other glycosides are not-

\* Herbal medicinal products - / Finished herbal products

- These are the medicinal products which contain exclusive herbal drugs are made from one / more herbs.-
- They may contain excipients in addition to active ingredients.-

\* Herbal drug preparation -

- They are prepared form of herbs.-
- They are derived from herbal drug by various techniques -
  - a. Extraction -
  - b. Fractionalization -
  - c. Purification -
  - d. Concentration fermentation -

• In the form of powders, extracts, tinctures, fixed oils, volatile oils, resins & gums etc -

\* They contain a mixture of various constituents -  
\* Pure isolated compounds do not come under this category.-

\* Sources of herbs -

• Herbs can be obtained through different sources.-

• Two sources -

a. Wild source -

b. Cultivated source -

① Wild source -

• The plants are obtained from the wild source such as forest, plains, river banks etc -

• Advantage -

- Obtaining herbs from wild source is very economical -
- Less time consuming -
- Decreased cost of labour -



### • Disadvantage -

- Quality of the plant can't be predicted due to various environmental changes -
- Plant will not be uniform in their growth & yielding characteristics -
- modern scientific techniques can't be applied to the yield as well as quality -

### (6) Cultivated source -

• Medicinal plants have been systematically cultivated by applying modern scientific techniques -

### • Advantages -

- Quality & purity is ensured -
- Better yield & more profit -
- Ensure regular supply of raw materials -

### \* Crop planning -

• Crop planning means regular supply of raw material to the industry -

### \* Application of technique -

• New modern scientific technique include -

• Plant tissue culture (PTC) -

• Genetic techniques -

• Hybridization -

• Gernoplasm -

### # Selection, identification & authentication of herbal material -

\* Herbs are subjected to various stages starting from their -

• selection, identification, cultivation, collection, storage & processing until the final product is formed -

### ① Steps involved in processing of herbal drugs -

① Selection of herbs -

② Identification & authentication -

③ Cultivation of herbs -

④ Collection of Herbs -

⑤ Processing of herbal raw material -



## \* Selection of herbs-

• As per WHO, more than 60% of world population using plant based medicine directly or indirectly.

\* It is very important to select right plant materials for development of herbal drugs.

\* Selection of plants can be done by-

- i) Randomized selection-
- ii) Ecological selection-
- iii) Chemo-systemic selection-
- iv) Ethano-botanical selection-

i) Randomized selection-

• Plant material is selected randomly from forest for discovery of new medicine.

ii) Ecological selection-

• It is an observation of animal behaviour for discovery & development of new drugs. - eg° *Trichillia rubescens* leaves (Antimalarial properties)

iii) Chemo-systemic selection-

• Distribution of chemical constituents is common in certain group of plants. - eg° *Emblia officinalis* (Anala-Ascorbic A)

iv) Ethanobotanical selection- [uses of medicinal]-

• It is branch of science which observes knowledge of people, their tradition for discovery & development of drugs.

## \* Identification & authentication of herbal material-

• Evaluation of drugs ensure the identity of drugs & determines the quality as well as purity of drugs.

i) Botanical identity- eg° species, subspecies, genus & variety etc.

ii) Specimens- In case of a new plant with medicinal properties & identity is not known.

iii) Seeds & other propagation materials-  
• Identity, quality as well as their breeding history.

## \* Other methods-

- a) Morphological / organoleptic / macroscopic method-
- b) Anatomical / microscopic method-
- c) Chromatographic method-
- d) Chemical method - eg° Qualitative & Quantitative -
- e) Physical method - eg° Boiling point, moisture etc -
- f) Biological method - eg° Bioassay & micro-assay -
- g) Instrumental method - eg° IR, mass spectroscopy -



## # Processing of herbal raw material -

Processing of herbal raw materials involves various stages from which the crude drugs undergo after ~~har~~ harvesting.

### \* Processing of herbal raw material classified into

i. Primary processing -

ii. Secondary processing -

i. Primary processing - ii. Secondary processing -

a. Garbling -

b. Washing -

c. Par-boiling -

d. Leaching -

e. Drying -

a. Cutting/sectioning -

b. Aging/sweating -

c. Baking/roasting -

d. Boiling/steaming -

e. Stir frying, fumigation, Extraction -

i. Primary processing -

It is the basic processing -

OR

It is the initial processing -

a. Garbling - [Sorting]

Helps in ensuring the purity &

cleanliness of the harvest materials -

The process depends on the part of the plant to be prepared -

Garbling may be done by mechanical, manually by hands

b. Washing -

After garbling process -

Remove the soil, dirt & other impurities from the surface of the herbal raw materials -

c. Par-boiling [Blanching] -

After washing process -

Herbal raw materials put in boiling water for short period -

Improving the storage life & prevent contamination

d. Leaching -

Some impurities can be removed by subjecting the plant material under running water known as leaching -

e. Drying -

Prevent the deterioration & degradation of active constituents -

\* Natural drying → Sun drying -  
→ Shade drying -



\* Artificial drying -  $\rightarrow$  Tray dryers - (Oven)  
 $\rightarrow$  Vacuum dryers -  
 $\rightarrow$  Spray dryers -

ii) Secondary processing -

It includes advanced techniques -

• It is done after/post primary processing -

\* Depending upon the nature of active ingredients as well as therapeutic properties -

\* Includes techniques such as -

- Removal of foreign substances -
- Prevention of microbial -
- Enhancing the efficacy of drugs -
- Reducing the toxicity -
- Extraction using suitable solvents -
- Conc. & drying of extracts -



\* These are further standardized by different method -

(a) Cutting, sectioning & comminution -

• Cutting & sectioning into smaller size which are convenient for storage as well as extraction  
 eg. Small particles, coarse powder & fine powder

(b) Aging/Sweating -

• Refers to storing the raw material for a specified time after harvesting -

• Sweating is done by subjecting the herbal materials at a temp. b/w 45°C - 65°C with high humidity for a period one week to few months -

(c) Baking/Roasting -

• Herbal materials is heated in oven.  
 • Duration of baking/roasting drug develops a specific color -

(d) Boiling/steaming -

• In the boiling process the drug is cooked in water/any other liquid solvent -

(e) Stir frying -

• Herbal material are put in spot of frying pan & continuously stirring for a specific period under heat until the external color changes -

(f) Fumigation -

• Preventing the growth of insects during harvesting of raw materials -  
 eg. Fumigation with "Sulphur-dioxide" is commonly used -



## (K) Extraction -

\* It is process in which the separation of chemical constituents present in plant & tissue using selective solvents - (menstruum) -

\* Herbal extracts includes -

- Infusion  $\Rightarrow$  without boiling -
- Decoctions  $\Rightarrow$  By boiling -
- Fluid extracts  $\Rightarrow$  By percolation or maceration
- Tinctures  $\Rightarrow$  Dilute alcoholic extract -
- Powder extracts  $\Rightarrow$  By Soxhlet method -

## (B) # Bio-dynamic agriculture #

(Organic farming technique)

- Biodynamic agriculture born in "1924" -
- Father of biodynamic farming is "Rudolf Steiner" -

• Biodynamics "1st modern organic agriculture" -

• Biodynamics method are based on "Anthroposophy" -

\* Biodynamics - derived from two greek words -

- "Bios" = Life -
- "Dynamos" = Energy -

\* Biodynamic agriculture is a form of "organic farming" -

\* Biodynamics is a system of organic agriculture which recognizes the biological & chemical values of soil & treats soil-fertility & plant growth -

\* Biodynamic farming treats animal, crops & soil as single system & fertilizers the use of traditional systems & development of new local breed & varieties -

\*\* Biodynamic farming is an alternative where the chemical fertilizers are totally replaced by microbial / biological nutrients derived from bacteria, algae, fungi - (use - manures & composts) -



## \* Organic farming:-

Production of crop & other products without application of harmful chemicals like synthetic chemical fertilizers & pesticides.-

## \* Aim behind organic farming:-

- Production of food of high quality in sufficient quantity.-
- Minimization of all forms of pollution.-
- Processing of products using renewable resources.
- Production of bio-degradable organic products.-
- Maintenance of long term fertility of soil.-
- Development of a valuable & sustainable aquatic eco-system.-

## \* Effect of organic farming:-

- Improve the biodiversity.-
- Improve soil quality & microbial biomass.-
- Lower nutrient content & release of nutrient is slow. so effective for long term use.-
- Act on plant growth directly through the production of phyto-hormones or indirectly through nitrogen fixation.-
- Bio-fertilizers contains microbial inoculants of living cell of micro-organism.-

Like- Bacteria, algae, fungi alone or combination

↓  
Increase crop productivity-

## \* Principles & guidelines for:-

- Good agriculture practice (GAP) in cultivation of medicinal plants:- including organic farming -  
• It is important for the production of good quality plant material.-

• The various stages of processing are-

- i. Seeds & propagation material-
- ii. Cultivation-
- iii. Soil & fertilization-
- iv. Irrigation-
- v. Crop maintenance-
- vi. Harvesting-
- vii. Primary processing-
- viii. Packaging-
- ix. Storage & transport-
- x. Staff requirements-
- xi. Documentation-
- xii. Quality assurance-



## ii. Seeds & propagation material:-

- Identified botanically, indicating plant variety, cultivar & its origin.

## iii. Cultivation:-

- Depending on the method of cultivation growers, standards operating procedures (SOP) for cultivation.

- Avoid environmental disturbances.

## iii. Soil & fertilization:-

- The use of fertilizers & other chemical products should be as minimum as possible & in accordance with the demands of the plant.

## iv. Irrigation:-

- Irrigation should be minimized as possible & only applied as per the needs of the plant.
- Irrigation water should be free from contaminants.

## v. Crop maintenance:-

- Preparation of land for growing crops should be good plant growth.

- Pesticides & herbicides should be avoided as far as possible.
- The use of pesticides & herbicides has to be documented.

## vi. Harvesting:-

- Harvesting should be done when the plants are in their best quality & quantity.

## vii. Primary processing:-

- It includes steps such as washing, drying, freezing etc.

## viii. Packing:-

- The product should be packed in clean, dry bags.
- The label must be clear, made from non-toxic material.

## ix. Storage & transport:-

- Packaged dried materials & essential oils should be stored in a dry building.
- Fresh products should be stored 0°C to 5°C.
- During transportation, sufficiently aerated vehicles should be used.
- National regulations on transport have to be followed.

## x. Staff requirements:-

- Training & education related.



- Staffs who work with the plant material must have a high degree of personal hygiene. -

#### xi) Documentation.

- All the propagation material & steps in the production process must be documented. -
- All the starting materials, processing steps including location of cultivation have to be documented. -

#### xii) Quality assurance.

- Ensure a good quality of the produced crude drug. -
- Other properties of plant material & an agreement have to be made. -

#### \* Pest & pest management in medicinal plants.

##### \* Pest:-

It is undesired animal or plant which causes loss of cultivated plants.

- Types of pests - i) Fungi & viruses -  
ii) Insects -  
iii) Weeds -  
iv) Non-insect pests -

##### i) Fungi & viruses.

- eg. *Ascochyta atropae* causes necrosis (death of tissues) of leaf. -
- *Cercospora atropae* produces leaf spot disease. -

##### ii) Insects.

- eg. Such as - flea beetle, flies, moth, cutworms, grass-hoppers, spiders & termites etc -

##### iii) Weeds.

- They cause depletion & shortage of nutrients, water, light, space to the cultivated plants. -
- eg. Parthenium, Ragweed, medic tea etc -

##### iv) Non insect pests.

a) Vertebrates -

b) In-vertebrates - (Non-vertebrates)

a) Vertebrates - eg. Monkeys, Rats, Rabbits, Birds, pigs etc -

b) Invertebrates - eg. Crabs, snails, mites, Nematodes etc -

#### \* Pest management in medicinal plants/method of pest control.

- Different techniques are followed -

- i) Mechanical method -
- ii) Agricultural method -
- iii) Biological method -
- iv) Chemical method -



### i. Mechanical method-

• Include simple techniques

Like- Hand picking -

- Pruning -

- Burning -

### ii. Agricultural method-

• Includes various methods.

Like- Crop rotation -

- Inter cropping -

- Integrated weed management methods -

- Solarisation -

- Genetic engineering technique -

### iii. Biological method-

• In method involves combating of pests with other living organisms -

### iv. Chemical method-

• Pests are controlled using chemical pesticides -

• These chemical substances are highly toxic to human & animals -

eg. Insecticides → malathion, Parathion -

- Fungicides → chlorophenols,  $\text{NH}_4\text{OH}$  compounds -

- Herbicides → Calcium arsenate, 2,4-dichloro phenoxy acetic acid -

• Rodenticides → Arsenic trioxide -

• Miticides → Chlorobenzolate -

### \* Bio-pesticides/Bio-insecticides for pest management/control-

• These pesticides are obtained from natural sources like micro-organisms, plants, animals, insects & certain minerals -

• Biopesticides are typically biological pest control -

• Biopesticides are applied similar to chemical pesticides -

• Biopesticides are available in different formulations -

\* Used to control soft down & seed born fungal pathogens -

• Bio-pesticides are best for controlling the pests of agriculture than the chemicals -

\* Bio-pesticides may be derived from animals, plants, & micro-organisms -

\* Controls pests by non-toxic mechanisms -

\* Biopesticides are safe to handle & use -

• Biopesticides are non-toxic to plants as well as humans -

• Biopesticides are bio-degradable -

• Biopesticides do not leave any toxic residues -



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## \* Types of bio-pesticides / bio-insecticides -

- i) Microbial pesticides -
- ii) Biochemical pesticides -
- iii) Plant-incorporated-protectants (PIPs) -

### i) Microbial pesticides -

• They consist of micro-organisms.  
Microbial pesticide can control pest -

eg. BT-toxin - (*Bacillus thuringiensis* - toxin) -

### ii) Bio-chemical pesticides -

• These are naturally occurring chemical substances which are obtained from insects & animals -

• Ability to control the pest by non-toxic mechanisms -

### iii) Plant pesticides -

• Various plants are reported to possess pesticidal & insecticidal properties -

eg. Neem, Tobacco, Pyrethrum, Gerani & Ryania -

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## ② Indian systems of medicine #

### \* Traditional sys Traditional system of medicine -

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• Ayurveda, Unani, Siddha & Homeopathy of medicines plays an important role in primary health care needs.

\* The system of medicines which are of Indian origin or which have to come India from outside into Indian culture are known as Indian system of medicines -

eg. Ayurveda system of medicine -

- Siddha system of medicine -

- Unani system of medicine -

- Homeopathy system of medicine -

### ① \* Ayurveda system of medicine \*

• Ayurveda system of medicine is the oldest medical system -

\* Term "Ayurveda" is derived from two "Sanskrit word"

• Ayur = Life -

• Veda = Science or knowledge -

\*\* Ayurveda word means "Science of Life"  
OR "Way of Life"

\*\* The ayurveda is a part of "Atharveda"



- \* The four vedas are → i) Rigveda -  
ii) Samveda -  
iii) Yajurveda -  
iv) Atharveda -

\*\* Father of Indian medicine "Charaka Samitha" -

\* "Charaka Samitha" was the 1st book having concept of practice of ayurveda -



\* "Sushruta Samitha" was the next ayurveda literature



Aimed on surgery -

\* It deals with different theories & fundamental principle of surgery -

\* Basic principles of ayurveda -

Pancha-mahabhuta    Tri-dasha    Guna-rasa-siddhanta

- |              |              |               |
|--------------|--------------|---------------|
| i) Prithvi - | i) Vata -    | i) Rasa -     |
| ii) Jala -   | ii) Pitta -  | ii) Guna -    |
| iii) Vayu -  | iii) Kapha - | iii) Utsya -  |
| iv) Agni -   |              | iv) Ulipaka - |
| v) Akasha -  |              | v) Prabhava - |

(a) Panchamahabhuta - { Pancha = five  
Mahabhuta = Elements }  
It believes that the "whole universe" is made up of 5 basic elements -  
\* They are present in the human body -

\* 5-Basic elements -

- i) Prithvi (Earth) -
- ii) Jala (water) -
- iii) Vayu (Air) -
- iv) Agni / Teja (Fire) -
- v) Akasha (Sky / aether) -

\* Combinations of these 5 basic elements form 7 basic tissue (Sapta-dhatu) of the body -

- Rasa [Lymph & Plasma] -
- Rakta [Blood] -
- Mamsa [Flesh] -
- Meda [Fat] -
- Asthi [Bones] -
- Majja [Marrow] -
- Shukra [Reproductive organs] -



\* These Sapta-dhatu undergo wear & tear to form "Mala" (Excretory products) -



## 6. Tri dosha -

The 3 basic elements exist in human body in 3 different forms -

- i) Vata (space + air) -
- ii) Pitta (fire + liquid) -
- iii) Kapha (liquid + solid) -

• These tri dosha when present in balance form in the body  $\Rightarrow$  Healthy condition -

• Any imbalance in tri dosha is cause disease condition

i) Vata - Regulates the psychic & nervous system  
• Imbalance cause disease - eg. ENT, heart, urinary tract & skin etc. -

ii) Pitta - Regulates energy production & metabolism  
• Imbalance cause disease - eg. Acidity, Ulcer, skin & indigestion etc. -

iii) Kapha - Regulates heart, formation of fluids & mucus  
• Imbalance cause disease -  
eg. Joint pain, brain disease & browniness etc. -

## 7. Guna-Rasa Sidhanta -

These are considered as five pharmacology principles -

- i) Rasa (Taste) - (Physical property)
- ii) Guna (Taste) -
- iii) Ushya (Active principle)  $\Rightarrow$  Drugs potency -
- iv) Vipaka (Digestive products) -
- v) Prabhava (Pharmacotherapeutic action) -

## \* Diagnostics in ayurveda -

- Observation of doshas (Vata, pitta & kapha) -
- Observation of skin, eyes, hair, nails & tongue -
- Recording the pulse -
- Investigation of mala (urine, stools & sweat) -

## \* Treatment in ayurveda -

- Elimination therapy -
- Alleviation therapy -
- Psychic therapy -
- Surgery therapy -

### • Drug -

- Arjuna-rishta -
- Khadira-rishta -
- Chitravanta arka -
- Kasturi gultika -

### • Uses -

- Heart disease -
- Skin disease -
- Fever -
- Aphrodisiac - (sexual desire)



## \* Branches of treatment in ayurveda -

- i) Kaya - chikitsa  $\Rightarrow$  General medicine -
- ii) Shalya - chikitsa  $\Rightarrow$  Surgery -
- iii) Shalakya - chikitsa  $\Rightarrow$  ENT -
- iv) Bala - chikitsa  $\Rightarrow$  Pediatrics (Branch of medicine dealing with children)
- v) Jara - chikitsa  $\Rightarrow$  Treatment related to genetics -
- vi) Rasayana - chikitsa  $\Rightarrow$  Treatment with chemicals -
- vii) Usha - chikitsa  $\Rightarrow$  Toxicology -
- viii) Vajikarana - chikitsa (Treatment related to reproductive organs & aphrodisiacs) -
- ix) Graha chikitsa (Planetary effects) -

## ② \* "Siddha system of medicine" \*

- The siddha medicine is one of the oldest medical system.
- \* Siddha means  $\Rightarrow$  "Achievements" -
- \* Father of siddha system of medicine "Agastya" (Akattiyar)
- The siddha medicinal system originated in the south-india in Tamil Nadu.
- It is believed that more than 10,000 years ago.

## \* Basic principles of siddha system -

- Triguna  $\begin{cases} \Rightarrow \text{Vata} \\ \Rightarrow \text{Pitta} \\ \Rightarrow \text{Kapha} \end{cases}$

\* Basic principles of siddha medicines are almost similar to ayurveda -

### i) Vata -

- Characterized by - Stout (baluan), Black, cold & inactive personalities -
- Imbalance cause - Acidity, Obesity, heart attacks -



ii) Pitta -

- Characterized by - weak, whitish, hot & active personalities.
- Imbalance cause disease -  
Early greying of hair, Reddish eyes, Burning chest, anemia & mental derangement.

iii) Kapha -

- Characterized by - Good complexion & good personalities.
- Imbalance cause disease -  
Jaundice, Heart attack, High fever & anaemia.

\* A particular guna in the body increases according to the time -

i) Vata is predominant at 6:00am to 10:00am  
& 6:00pm to 10:00pm -

ii) Pitta is predominant at 10:00am to 2:00pm  
& 10:00pm to 2:00am -

iii) Kapha is predominant at 2:00am to 6:00am  
& 2:00pm to 6:00pm -

\* Diagnosis in Siddha system -

- During the diagnosis the physician studies 8 things -
- Madi (pulse) -
- Shwani (speech/sound) -
- Twaka (Tongue) -
- Deham (Body) -
- Meeram (Colour) -
- Malam (Faeces) -
- Mutram (Urine) -
- Uizhi (Eyes) -

\* Treatment in Siddha system -

• Siddha physicians give knowledge of 1-thousand herbs & their effectiveness in specific composition & formulation.

\* Commonly medicines are prepared freshly for specific diseases.

\* The formulations are prepared using plants, animals, minerals & metals are used in small quantities.

\* The following formulations are commonly used in Siddha -

- eg. - Kashayam (Decoction) -
- Churan (Powder) -
- Tailam (Medicated oils) -
- Bhasma (Calcinated drugs) -



### ③ \* "Unani system of medicine" \*

- Unani system originated in "Greece" -
- It was started by a Greek philosopher - Hippocrates -

\* Father of unani system of medicine "Hippocrates"

\* Unani medicine is one of the oldest medicine in the world -

\* It was introduced in India by the "Arabs" & "Persians" around the 11-century -

\* Basic principle of unani system -

<u>Hippocratic theory</u>	<u>Pythagorean theory</u>
i> Blood -	i> Hot & moist -
ii> Phlegm -	ii> Hot & dry -
iii> Yellow bile -	iii> Cold & moist -
iv> Black bile -	iv> Cold & dry -

\* Unani system considers that the entire universe is made of 4-basic elements -  
eg. Fire, air, earth & water -

### \* Hippocratic theory -

- 4-humours mentions the 1st products of digestion -
- i> Blood (Dum) -
- ii> Phlegm (Balgham) -
- iii> Yellow bile (Zafra) -
- iv> Black bile (Souda) -

### \* Pythagorean theory -

- 4-proximate qualities includes -  
Hot, cold, moist & dry -

\* 4-Basic elements combinations & represent of universe -

- i> Hot & moist (Air) -
- ii> Hot & dry (Fire) -
- iii> Cold & moist (Water) -
- iv> Cold & dry (Earth) -

\* These 4-qualities represent the nature (or) human (or) temperament of individual known as "mizaj" -

- mizaj-e-har  $\Rightarrow$  Hot -
- mizaj-e-barid  $\Rightarrow$  Cold -
- mizaj-e-yabis  $\Rightarrow$  Dry -
- mizaj-e-rath  $\Rightarrow$  moist -



- \* Balance form of these mazaj is called "Healthy-condition"
- \* Imbalance form of these mazaj is called "Pathological-condition"
- \* Diagnosis in Unani system -
  - It is done by recording the parameters such as -
    - Psychology, age, gender, habits, working condition & history etc.
    - Pulse reading -
    - Examination of sputum, urine & stools -
    - Patients counselling -
- \* Treatment in Unani system -
  - Regimental therapy - [Removing the toxins from body]
    - Includes emetics, purging, diaphoresis, diuretics, massaging, Turkish bath etc.
  - Diet therapy -
    - It is done by using special diet.
    - The quality & quantity of foods is regulated.
  - Pharmacotherapy -
    - It deals with the use of medicines. Most commonly natural drugs are used.

#### ④ \* "Homeopathy system of medicine" \*

- \* Homeopathy means "similar suffering" -
  - Homeo  $\Rightarrow$  "similar" -
  - Pathos  $\Rightarrow$  "suffering/pain/Hurt" -
- It means the cause of the disease itself can be used for its treatment -
- OR
- The substance producing similar symptoms of disease in healthy individuals can be used to treatment that disease.
- \* Homeopathy was introduced by a "German physician" - "Dr. Samuel Hahnemann" -
- \* Homeopathy is a unique, natural, holistic system of medicine which stimulates the body's healing responses with no known common side effects.
- \* Homeopathy is an alternative medical practice in which extremely dilute amounts of certain natural substances are used to treat various diseases.
- \* Basic principles of homeopathy -
  - i. Individualisation -
  - ii. Principle of similia - eg. Vaccines -
  - iii. Principle of simplex -



- iv) Principle of minimum dose =  $\left\{ \text{Dose} \propto \frac{1}{\text{Potency}} \right\}$   
 v) Law of providing -  
 vi) Law of dynamization -  
 vii) Vital force -

### \* Diagnosis in homeopathy -

- Collection of detailed case history & medical history.
- Investigation of symptoms, location, sensation etc.
- Build up a symptoms picture of the patient.

### \* Treatment in homeopathy -

- Used drugs in the form of mother tincture, small pills & powders.
- \* Preparation of doses involved 3-processes -
  - i) Titration -
  - ii) Succession -
  - iii) Serial dilution -
- \* Potentiation is a physical process denote by "C" -
- \* 3-scales are used -
  - a) Decimal -
  - b) Centesimal -
  - c) Millesimal -

- \* Sources of medicines  $\Rightarrow$  Plants, Animals, minerals & chemicals, Serum & micro-organisms -

Exam

### \* Preparation & standardization of ayurvedic formulae

- \* Ayurvedic dosage forms can be divided into 4-types depending upon their physical nature -

i) Liquid dosage forms - eg. \* Arishta -

- \* Asawa -

ii) Solid dosage forms - eg. \* Ghutika -

iii) Semi-solid dosage forms - eg. Kalka, Avaleha -

\* Lehya (Avaleha)

iv) Powder dosage forms - eg. \* Churna -

\* Bhasma -

### i) Liquid dosage forms -

#### a) Preparation of arishta & asawa ayurvedic formulae

#### \* "Arishta"

- It is prepared from the extraction/decoction method of "medicinal herbs" -

#### \* "Asawa"

- It is prepared from the extraction/decoction method of "fresh herbs" -

- \* Arishta & Asawa are alcoholic preparation -



\* Shataakai phushps - Help in fermentation -  
• Asawa - "Klood foridra fruticosa" -

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\* Arishta ayurvedic preparation -

- Drug powdered prepare extraction/decoction -  
↓
- Filter prepared extract/decoction -  
↓
- Into vessels, extract + Sugar/Jaggery/honey & boil -  
↓
- Added "Dravyas" + "Shataakai pushpa" -  
↓
- Close the earthen lid sealed edges with clay smeared cloth -  
↓
- Place vessel in cellar for specific time period for Sadhana (fermentation) -  
↓
- Filter & collect "Arishta formulation" -

\* Asawa ayurvedic preparation -

- Into vessel Sugar/Jaggery/honey & boil -  
↓
- Added powdered drug (Patha) -  
↓
- Close the earthen lid sealed edges with clay smeared cloth -  
↓
- Place vessel in cellar for specific time period for Sadhana -  
↓
- Filter & collect "Asawa formulation" -

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\* Properties of liquid dosage form -

- It should be clear -
- It has characteristic, aromatic & alcoholic odour -
- During fermentation → Alcohol is produced which facilitated extraction of active constituents contained in the drug -
- \* Alcohol also serve as preservative in the product -

\* Self life - [Shelf life] -

- Arishta & Asawa are store for longer time -

\* Storage conditions -

- It should be stored in airtight close container, narrow mouthed -
- Store in cool place away from sunlight -

\* Standardization of arishta & asawa -

- I. Organoleptic evaluation - eg. Colour, odour, taste, nature & texture -
- II. Physical evaluation - eg. pH, specific gravity at 25°C & total solid -
- III. Evaluation of reducing sugar & non-reducing sugar -



- iv. Chromatography evaluation -
- v. Chemical evaluation → Qualitative evaluation -  
→ Quantitative evaluation -
- vi. Biological evaluation - eg. Pesticide residue -  
- Heavy metal presence -  
- Micro-organism contamination

### \* Example of Arishtas & Asawas

- Arishtas - eg. Dashmularishta -  
- Shalakarista -  
- Asokarishta -  
- Ulagarishta -
- Asawas - eg. Kumariasava -  
- Madhukasava -  
- Punarnavasava -  
- Chandanasava -

### ii) Solid & powder dosage form -

#### a) Bhasmas -

- These are powdered form of ayurvedic preparation -
- These are obtained by calcination of metals, minerals & animal products by a special process in closed crucibles or pits covered by cow dung cakes (puta). -

- Example - Shweta Bhasma -  
- Shriakha Bhasma -  
- Tamra Bhasma -

### \* Preparation of Bhasma -

i) "Shodhana" - It is process of purification & detoxification by which physical & chemical blemishes & toxic materials are eliminated. -

- Subst are subjected for further processing. -
  - Remove harmful substances & impurities present in the drugs -
- ⇓

ii) "Marja" - It is process in which metals & minerals are made into paste with various drugs & juices. -

- Objective to make Bhasma & this drugs are reduced to finest particles. -

⇓

iii) "Tarana" - It is process of decomposing the particles by subjected to fire treatment in a measured manner for reducing them to ashes. -

- To make it absorbable -

### \* Properties -

- Bhasma has great therapeutic value because they get absorbed easily into body even in very small doses. -



\* Shelf life - Quite stable products, maintain potency for a long time -

\* Storage -

- Store in cool & dry place -
- Keep away from moisture & sunlight -

\* Standardization of Churna -

- Organoleptic evaluation -
- Physical evaluation -
- Chemical evaluation -
- Biological evaluation -
- Analytical evaluation -

⑥ Churna -

- Dried ayurvedic dosage form comprises of fine powder of drugs -
- Drug can be any dried part of plant -  
eg. stem, leaves, root, bark, fruit etc -

- \* The Churna is free flowing powder -
- \* The principle of using Churna is due to the fact that therapeutic value -
- \* It is particularly notable in the cases of antacids, protective & adsorbents -

\* Preparation of Churna -

- Separation of powders cleaned & dried properly -

↓

- Powders reduced to small size (pulverised) & pass through sieved (80 mesh size) -

↓

- Weighed & mixed together uniformly -

↓

- Churna prepared -

\* Shelf life -

- If stored properly - retains potency for 1 year -

\* Storage conditions -

- Air tight close container, kept away from moisture -
- Store in cool & dry place -

\* Standardization of Churna -

- Organoleptic evaluation -
- Physical evaluation -
- Chemical evaluation -
- Biological evaluation -
- Analytical evaluation -



- Example - Ashwagandha churna -
- Triphala churna, Trikatu churna -
- Sudarshan churna, Shaktashadi churna -

### c) "Gutika" / Modaka / Vati / Vadagam / Tablets / Pills

- Gutika is solid ayurvedic dosage form made up of one or more drugs of plant, animal or mineral origin -
- Gutika is in the pills form -
- Vati is in tablet form prepared by compression -  
eg. Marikaadi gutika, Khadiradi vati, Sanjivani vati -

#### \* Preparation of gutika -

- The drugs of plant origin are dried & made into fine powders separately -  
⇓
- The minerals are made into bhasmas -  
⇓
- Put into a suitable container & ground to a soft paste with the prescribed fluids -
- When more than one liquid is mentioned for grinding they are used in succession -  
⇓
- When the mass is properly ground & is in a condition to be made into pills -  
⇓

- mass is rolled manually or with the help of suitable machine, compressed into gutikas / vati -

#### \* Shelf life -

- Preparation containing vegetable drugs can be used for 2 years -
- Preparation containing minerals or metals can be used for indefinite period -

#### \* Storage -

- It should be in airtight container -
- Should be kept away from moisture -

#### \* Standardisation of gutika -

- i) Organoleptic evaluation -
- ii) Physikal evaluation -
- iii) Chemical evaluation -
- iv) Biological evaluation -
- v) Analytical evaluation -

#### \* Pharmaceutical standardisation of solid dosage form

- i) Hardness -
- ii) Uniformity in weight -
- iii) Uniformity in diameter -
- iv) Weight variation -
- v) Friability test -
- vi) Disintegration time -
- vii) Dissolution time -



iii) Semi-solid dosage form-

a) "Lehyas" / Leham / Avalaha / Paka - semi-solids-

- Lehyas are thickened, sweetened extracts of single or combination of herbs, animal & mineral matter-

\* Preparation of Leha-

- Sugar/Jaggery + Liquid boiled & dissolved (Ghee/ Oil if any)
- ↓
- Powdered drugs in small quantities -
- ↓
- Stirred continuously -
- ↓
- Homogenous mass is formed -

\* Shelf life-

- Used within a year -

\* Storage-

- It should be stored in an airtight close container -
- wide mouthed container is used -
- keep away from hot & humid conditions -
- kept glass / porcelain jar or suitable plastic or metal container which is inert -

\* Standardisation of Leha-

- i) Organoleptic evaluation -
- ii) Physikal evaluation -
- iii) Chemical evaluation -
- iv) Biological evaluation -
- v) Analytical evaluation -

- Examples- Brahma Rasayanam -
- Sukumara Rasayanam -
- Drakapavaleha -
- Chyanprasha -

\* Taila - Also called "medicated oil"

- eg. Bhringaraja Taila -
- Maha Marayan Taila -
- Laghu Visagarbha Taila -
- Anu Taila -
- Jhanvantara Taila -